

REMARKS

Claims 2-7, 14 and 15 are pending in the application. Applicant respectfully requests withdrawal of the rejections, and allowance of the claims.

I. The claims are in proper condition

Claims 2-7, 14 and 15 stand rejected under 35 U.S.C. § 112, 1st paragraph due to alleged lack of enablement, and under 35 U.S.C. § 112, 2nd paragraph due to alleged indefiniteness. Applicant respectfully submits that the claims are in proper condition, and requests withdrawal of the rejections.

The Examiner asserts that the specification does not disclose a specific spacing for producing the desired zones of jet separation, based on a three-dimensional separation of flow, or a limit on the number of mutually spaced separation triggering elements. Further, the Examiner states that the claims are indefinite, based on the foregoing deficiencies of the specification.

The Examiner characterizes Applicant's invention as an improvement over Mueller, which has closely spaced injection points [that do not produce a three-dimensional separation of flow.] According to the Examiner, this disclosure raises a question as to the minimum required spacing.

Applicant respectfully submits that the requirements of 35 U.S.C. § 112, 1st paragraph have been met by the specification of the present application, which clearly addresses the foregoing issues.

Applicant directs the Examiner to application page 7, line 11-page 8, line 13, and page 8, line 31-page 9, line 18, which provides a written description enabling one skilled in the art to make the claimed invention, as well as application Figure 1. Those portions of the present application teach that the number and spacing of the injection points must be chosen to avoid

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continuity of jet separation, which would result in the operating conditions of Mueller, which create a continuous shock ring. Additionally, the specification discloses that the spacing of the claimed invention must be such that a continuous shock ring is not formed.

Accordingly, Applicant respectfully submits that because there is no appreciable benefit to increasing the number of holes, one skilled in the art [through reasonable experimentation, would be able to determine an upper limit on the number of holes.] Once the results of this greater number of holes created an embodiment inconsistent with the disclosed best mode, the upper limit would have been surpassed.

As disclosed therein, the preferred embodiment (best mode) has three injection points. However, more than three injection points may be implemented without any appreciable advantage. Further, the specification supports the assertion that more than three injection points complicates the structure by increasing the weight and gas flow, proportionally with the number of injection holes. Thus, Applicant respectfully submits that one skilled in the art would be able to make the claimed invention, based on the disclosure of the specification.

How many more

Additionally, Applicant submits that application Figure 1- clearly illustrates forming distinct zones of separation. For example, the injection points 5 generate separation regions 6 having an apex 9 upstream of the injections points 5. The conical separation regions 6 remerge downstream. Applicant respectfully submits that application Figure 1 clearly illustrates this distinction from Mueller.

Also, Applicant respectfully submits that the 35 U.S.C. § 112, 2nd paragraph rejection is improper, because it is apparently based on deficiencies in the specification. Applicant notes that

the requirements for the 1st and 2nd paragraphs of 35 U.S.C. § 112 are separate and distinct, and that is considered improper to make combined rejections under MPEP § 2174. However, Applicant also respectfully submits that the claims are definite, for at least the reasons discussed above, with respect to those recited features.

II. The claims are novel

Claims 2-7, 14 and 15 stand rejected under 35 U.S.C. § 102(b) over the individual application of Mueller (U.S. Patent No. 3,925,982) and Rannie et al. (U.S. Patent No. 5,582,000, hereafter “Rannie”). Applicant respectfully submits that the cited references each fail to disclose all of the claimed combinations of features.

With respect to the Examiner’s characterization of the claimed spacing of the triggering elements, Applicant respectfully disagrees with the Examiner’s position that they are merely desired results, but are actually directed to functional language. Applicant respectfully submits that the spacing is claimed in the context of a means plus function element and thus, the functional aspect of this claim must be examined with respect to the prior art.

is functional of means injection
The presently claimed invention spaces the injection orifices 5 to avoid creating such a fluid shock ring. The orifices 5 create cones 6, which remerge downstream to form a jet at the exit 8 of the nozzle. As a result, the fluid from a given injection point 8 does not merge downstream with the fluid of an adjacent injection point, but instead merges downstream between the cones 6 that have been initiated by the flow through the injection orifices.

Applicant respectfully submits that the cited references individually fail to disclose or suggest a means for simultaneously injecting fluid through the at least two separation triggering

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elements of the at least one injection cross section of the divergent nozzle body, wherein the spacing of the separation triggering elements is sufficient for the injection through the at least two separation triggering elements to generate as many distinct zones of jet separation as there are separation triggering elements from mutually spaced initiation points positioned in the divergent nozzle body, to form a three-dimensional separation of the flow, as recited in independent claim 14.

Applicant respectfully submits that as previously noted, Mueller discloses a ring slot to produce a fluid shock ring (or a plurality of closely spaced holes). Mueller also discloses closely spaced holes 120 that generate a fluid shock ring. A continuum is formed akin to that which is produced by a ring slot, using a large number of holes (e.g., 267). In Mueller, jet separation begins at a random point of the fluid shock ring, and is thus unstable.

As a result, there are a large number of holes (267). However, Mueller does not disclose or suggest a maximum distance between spaced holes to form the fluid-dynamic shock ring. Therefore, Applicant submits that Mueller teaches spacing the holes to obtain the effect produced by a uniform form, which is the opposite of the claimed invention.

Applicant also respectfully submits that Rannie does not disclose or even suggest the aforementioned claimed features.

Claims 2-7 and 15 depend from independent claim 14, and are believed to be allowable for at least the same reasons as discussed with respect to independent claim 14. Additionally, Applicant respectfully submits that the cited references fail to disclose (or even suggest) a

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distributing device that selectively feeds the injectors as a function of altitude, as recited in dependent claim 7, or a conical nozzle body, as recited in dependent claim 15.

Therefore, Applicant respectfully requests withdrawal of the rejections, and allowance of the claims

III. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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